Benchmarking

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What is benchmarking?

A benchmark is a standard that provides a measuring-stick for relative performance. Benchmarking is critical to formulating a knowledge-based plan of action to achieve objectives

Why Benchmark Your Building Performance?

- Lower Costs

- Budgeting and Planning

- Where To Improve

- Justification For Capital Improvements

Benchmarking Energy Efficiency

- Market Segmentation (who are you?)
- Cost/Usage
- Technology
- Utility Awareness

Who Are you?

- Select a peer group for comparison.
  - Schools
  - Colleges
  - Hotels
  - Hospitals
  - Office
  - Industrial
  - Prisons
  - Residential
- Find information about this peer group that will enable you to establish a common ground.

Cost/Usage

- Energy Cost Benchmarking
  - Easiest
  - Cost per Sq ft Divide total utility cost by building square footage.
  - Limited view of actual building performance
  - Subject to regional variances (ie cost of utilities)

Example of Cost/Sq Ft.

Project

Project		Amount		Project		Amount
Johns Hopkins	$	2.54		UMBC	$	1.63
U Del	$	2.14		Umass Lowell	$	1.31
Edinboro U	$	2.02		Lincoln U	$	1.21
KU Med	$	2.00		Kings College	$	1.20
Pratt	$	1.88		Oakland	$	1.12
Suny Cobbleskill	$	1.80		St Louis	$	1.12
Morgan State	$	1.70		Idaho State	$	1.04
Suny Old Westbury	$	1.69		Shippensburg U	$	1.02
St Lawrence U	$	1.67		Hiram	$	1.01
				Lycoming	$	0.79
				Average	$	1.52

Usage Benchmarking

- Strips out the cost variable
- Utility specific
  - Electricity and fossil fuels are benchmarked separately
  - Allows For Broader Comparisons
- Converts units (kwh, therms of gas, gal of oils, tons of coal) into Btus.
- Actual comparison is made by comparing btu's/sq ft/yr between facilities with similar use.

Sample Usage Levels

- K-12 School
- Hospitals
- Prisons

Technology Benchmarking

- Determining the level of installed technology as it compares to other peer facilities.
    - Building management systems and to what degree.
    - Lighting (T8, electronic ballasts, controls)
    - Building shell (windows, doors, additional insulation, other modifications
    - Additional system info (cogeneration, ice storage, fuel switching.
    - Advanced metering

Utility Awareness

- What is your organizations awareness level???

  - Energy spending is tracked annually, monthly, weekly, daily, hourly?

  - Energy efficiency/cost control is part of your performance objectives.

  - Facility users are aware of energy efficiency/cost control.

Benchmarking Process

- Utility audit
  - Data is accumulated and analyzed to determine cost and consumption data on a per sq ft basis.
  - This data is compared with similar facilities to determine where you stand.
- Facility inventory
  - Building age and construction.
  - Physical inventory of energy consuming equipment and devices is taken.
  - Inventory is analyzed to determine impact on energy consumption.
- Operating characteristics
  - Data is gathered to compare how your building operates and when. Unusual requirements should be noted.
  - Actual operating parameters should be captured for evaluation.
- Final Evaluation
  - Baseline audit information should be modified upward or downward to account for anomalies in your operation that will skew the comparison.